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Section 5 Site Investigation Techniques

I. INTRODUCTION

Consistent and appropriate site investigation techniques must be used to ensure that accurate, reliable, and representative data are collected during the site assessment process. The following guidance is provided to establish standardized methods and procedures for the investigation, testing, and interpretation of geology, hydrogeology, and contaminant mobility. This section is not intended to duplicate well-established methods and procedures, but to establish minimum standards for proper investigation techniques at a contaminated site.

The investigation techniques include soil and rock sampling, soil vapor sampling, direct measurement of vapor flux, groundwater sampling, laboratory analysis, and stockpile sampling. Additional guidance on standard field and laboratory methods can also be found in many textbooks, government agency documents, and professional society publications. A list of references for various topics is provided in Appendix I.II.

II. BORING AND WELL PERMITS

Permits are required for all groundwater, vadose wells, cathodic protection wells, and for many exploratory borings (San Diego County Code, Title 6, Division 4). Standards for well construction, destruction, reconstruction, or repair are as stated in California Department of Water Resources Bulletins 74-81 and 74-90. More specific boring and well construction standards are presented in Appendix B.IV. An explanation of permit requirements is provided below. Completed permit applications must be submitted to the San Diego County Department of Environmental Health (DEH), and approval must be received before drilling can begin.

In San Diego County, wells include:

- Community supply wells,
- Individual domestic wells,
- Commercial supply wells,
- Industrial supply wells,
- Agricultural supply wells,
- Cathodic protection wells,
- Groundwater monitoring wells (observation wells and piezometers),
- Groundwater remediation wells,

- Vadose monitoring wells, (vapor wells, gas monitoring wells, vapor probes),
- Vapor extraction/inlet wells, and
- Borings (test holes, auger holes, driven test holes, cone penetrometer test holes, Site Characterization and Analysis Penetrometer System [SCAPS] test holes, geotechnical borings, etc.).

A. Permit Requirements

1. Groundwater, Vadose, and Cathodic Protection Wells

Well permits are required for any groundwater, vadose, or cathodic protection well installation regardless of how the well is installed. Information on the construction and destruction methods and specific permitting requirements for cathodic protection wells can be found on the San Diego County website at the Monitoring Well Program page (<http://www.sdcountry.ca.gov/deh/lwq/sam/monitoring-well.htm>).

2. Exploratory or Test Borings and Geotechnical Borings

Well permits are required on all sites for:

- Any boring in which a casing will be installed
- Any boring that has a monitoring device installed
- Any soil boring greater than 20 feet in depth
- Any soil boring, 20 feet or less in depth, where the groundwater table is anticipated to be encountered

A permit for geotechnical borings may be waived after review by DEH of information on the location of the borings. Waivers are considered only for areas where hazardous waste or hazardous materials have not been stored, are not now stored, are not proposed to be stored or areas where soil and groundwater contamination is not known or suspected. Submit a waiver request (available at the above referenced website) along with a detailed site map and a description of the proposed work to assist DEH in the evaluation.

3. Well Destruction

Well permits are required for destruction of any groundwater, vadose, or cathodic protection well.

4. Well Reconstruction

Well permits are required for reconstruction of any groundwater, vadose, or cathodic protection well. Minor modifications may be completed without a permit but must be approved by DEH before work is begun.

B. Permit Application

Submit one original and (3) copies of a complete “Permit Application for Groundwater and Vadose Monitoring Wells and Exploratory or Test Borings” (well/boring application), detailed site plan, additional supporting documents (if required), and the appropriate fees to the

Monitoring Well Permit Desk. A copy of the well/boring application is available in Appendix B.II. DEH will not process the application until all fees are submitted. At least one of the application copies must have original signatures of both the driller and the Registered Geologist (RG), Registered Civil Engineer (RCE), Certified Engineering Geologist (CEG), or Certified Hydrogeologist (CHG). Please allow seven to ten (7 to 10) working days for processing and review.

If an incomplete application is submitted, the permit application may be returned.

The contact person indicated on the well/boring application will be notified when the application is approved or disapproved. At that time arrangements will be made to have the permit picked up at the DEH office or mailed to the address indicated on the application.

1. Application

Complete the “Permit Application for Groundwater and Vadose Monitoring Wells and Exploratory or Test Borings.” The following information must be included on the application.

- a. Assessor’s parcel number (APN)
- b. Current property owner
- c. C57 driller's name (all work must be done by a properly California licensed driller with a bond to work in San Diego County.)
- d. Registered Geologist or Civil Engineer on project
- e. Number of wells (or borings) to be constructed or destroyed
- f. Well type
- g. Drilling method
- h. Proposed materials to be used
- i. Proposed well construction or for well destructions, a copy of the well “as built” diagram
- j. Driller’s signature (must have original signature)
- k. Original signature of Registered Geologist (RG), Registered Civil Engineer (RCE), Certified Engineering Geologist (CEG), or Certified Hydrogeologist (CHG)
- l. Evidence of a \$7,500 bond, posted with the San Diego County Department of Environmental Health
- m. Detailed site plan (drawn to scale) showing the location of the proposed well(s) and/or boring(s) and the location of existing wells. The plan must show the location of existing improvements, such as structures, underground storage tanks (USTs), and underground utilities. An adequate vicinity map is also required to show the site location in relation to the surrounding area.
- n. Supporting documents:
 - Applications for traffic control permits, and encroachment/excavation permits for work in the public right-of-way
 - Property Owner Responsibility Acknowledgement (PORA) is required on applications for all work except: onsite, open LOP site assessment cases (SAM is lead agency), Caltrans property & Military property.

2. Fees

To be accepted by DEH, a well/boring application must be submitted with the appropriate fees. The current permit fees are detailed on page three of the application that is provided in Appendix B.

3. Refund of Permit Fees

If you did not complete the original scope of work for the permit issued, submit a written request to the Monitoring Well Permit Desk for a refund of the appropriate portion of the unused fees. Your request must be received within 30 days before the expiration date of the permit. A fee will be deducted from the refund to cover the processing and the technical review of the permit.

4. Permit Extensions

A permit is valid for 120 days. It may be extended for an additional 120 days for the purpose of completing the original scope of work.

Submit a written request for an extension to the Monitoring Well Permit Desk before the expiration date, along with an extension fee. Contact the Monitoring Well Desk for the amount of the fee as it is based on the Environmental Health Technician hourly rate. The maximum term of a permit cannot exceed one (1) year.

5. Permit Modifications

Permit modifications will be granted if DEH is notified at the time of initial drilling activities that further work is needed. We will require a written request for a modification, including the additional fees and a revised site map to be submitted to our office within 48 hours. If it is determined after the initial drilling that additional work is necessary; a new application must be submitted.

C. Inspections

1. Drilling Inspections

DEH must be given 48 hours notice prior to commencement of drilling activity. DEH staff conduct random on-site drilling inspections. These inspections are to observe field activities and to ensure that all work is being completed in compliance with the current local and state requirements.

2. Well Completion Inspections

- a. DEH staff will perform inspections of all sites that have groundwater, vadose, or cathodic protection wells, or where these wells have been destroyed, to determine if the wells were completed in accordance with current local and state standards and to observe the long-term maintenance of the well(s) and site.
- b. Official Notices will be issued when it is observed that monitoring wells or cathodic protection wells are not being maintained and/or they present a potential public health hazard or environmental hazard.

3. Re-inspections

While inspecting drilling sites, DEH staff may discover that the scheduled drilling operations were cancelled. If the DEH Monitoring Well Permit Desk has not been properly notified of a

drilling cancellation, and staff travels to a site to conduct an inspection, a re-inspection fee may be required. Contact the Monitoring Well Permit Desk at (619) 338-2339 for any drilling activity, including cancellations.

No additional fees are charged when an Official Notice has been issued and, upon re-inspection, violations have been corrected. A re-inspection fee will be required for each subsequent re-inspection when violations have not been corrected.

D. Drilling Bond

Prior to obtaining a permit to drill, the licensed driller must have a \$7,500 bond posted with DEH. This bond can either be a cash bond or an insurance performance bond. For details concerning drilling bonds, call (858) 565-5173.

E. Permit Conditions

1. Workplans

An approved drilling permit application does not constitute an approved workplan as defined in CCR Title 23, Article 11, Section 2722.

2. DEH Notification

The consultant/driller must notify DEH 48 hours before the date of drilling. Additionally, the consultant/driller must also notify DEH of any cancellation or rescheduling of drilling. Call (619) 338-2339 for all scheduled drilling, cancellations, or rescheduling.

3. Well Log Submission

Within 60 days after construction or destruction of wells, or drilling of borings, a report with the following information must be submitted to DEH and the California Department of Water Resources (770 Fairmount Avenue, Glendale, CA 91203-1035) on DWR Form 188. The information for DEH must be sent directly to Monitoring Well Permit Desk, Site Assessment and Mitigation Program, County of San Diego, Department of Environmental Health, P. O. Box 129261, San Diego, CA 92112-9261.

a. For wells and borings, provide:

(1) Location and identification of property by:

- Site name and address
- Assessor's parcel number
- Establishment number (H#), if any
- Well permit number

(2) A detailed plot plan drawn to scale showing location of site and nearest cross streets, property boundary lines, existing improvements such as USTs, piping, and/or utilities, and the location of all wells and borings, both existing and proposed.

- (3) A detailed log for each well/boring describing the density, moisture content, color, grain size distribution, and character of all lithologic units penetrated. The log must include:
 - Depth of first groundwater
 - Static water level in the completed well(s)
 - Date of measurement
 - Field vapor readings
 - (4) A detailed “as-built” well construction diagram with type of casing, screened interval, screen slot size, type of filter pack, location and type of seals, and volumes of materials used (cubic feet), and surveyed well elevations and locations. Surveying must be performed by an appropriately licensed professional and meet the accuracy requirements of CCR Title 12, Section 2729-2729.1. For borings, indicate the types and amounts in (cubic feet) of sealing materials used to backfill each borehole.
 - (5) A grain-size analysis of the lithologic unit or units that represent soils adjacent to the perforated portion of the well, if performed.
 - (6) All laboratory analysis data and chain of custody if there is no current DEH site assessment case.
 - (7) All well construction and boring reports must have the original signature of the registered professional and/or their seal as required by the Business and Professions Code. The RG, CEG, RCE, or CHG is responsible for the accuracy and completeness of the logs and accompanying data
- b. For Well Destruction
- (1) Provide a detailed site plan, as outlined in Section 5.II.E.4.a. (2), drawn to scale, and giving accurate locations of all wells and borings with well identification numbers.
 - (2) Include the location of the site by:
 - Site name and address
 - Assessor’s parcel number
 - Well permit number and/or establishment number
 - (3) Documentation of well destruction includes:
 - Description of the method of destruction
 - Description of the type of sealing materials and volume of materials used (cubic feet)
 - Date the work was started and the date the work was completed

4. Storage of Drill Cuttings and Groundwater

a. Drum Labeling

Temporary drum storage of contaminated drill cuttings (soil) or groundwater requires proper labeling.

- (1) If the drill cuttings or groundwater is a hazardous waste, a hazardous waste label must be properly completed and affixed to drums. All hazardous waste must be managed, stored, and disposed of in accordance with all applicable hazardous waste laws and regulations.
- (2) If the drill cuttings (soil) or the groundwater is not suspected of being contaminated (e.g., awaiting laboratory results), the drums must be clearly marked with the following information.
 - Description of contents (e.g., soil, water)
 - Boring identification
 - Date of boring
 - Consulting company name
 - 24-Hour contact phone number

b. Drum Storage

All drums must be labeled and stored within a secure area. Drums containing hazardous waste must be removed within 90 days. Minimum stormwater requirements must be met according to Appendix N.

F. Well and Boring Standards

Please refer to Appendix B.IV for local standards on well construction, well reconstruction, and well and boring destruction. Additionally, San Diego County requires all work to comply with the Department of Water Resources Bulletins 74-81 and 74-90.